#9

Fig.1

Primer Sequences for PCR amplification of any SSA gene.

Primer names ECP 1 and ECP 2 [Expression cloning Primer (ECP)]

ECP 1 => 5'CAT AAA ATT TCT AAG ACG AAG GAT CCC TAT GTC 3'

ECP 2 => 5'GAG AGA AAG TTC CCC GTG TGA ATT CTA GCT AGG 3'

Fig.2A

ATTGGATCTAAATAATGTACACTGGAGGTTCGTATTTTCTATTATGAAAGGGATAGA 57

-35 -10 +1
ATGTTAAATTTTATGATTTTTTATAATAAAAATAGATATAAAATTTAGTAGTTTTAT 114

AAATTTTTCATAACAAAGGACTATCCTCCTTGCATAAAATTTCTAAGACGAAAAATC 171
RBS

CCTATGTCAAATGAAACACTTTTGAGCGTACTTTCTGATGAAACGCACTTTGCTAAT 228
M S N E T L L S V L S D E T H F A N

CTAGTTGATGAACTTCTTCTCATCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285
L V D E L L L I L V K D S I F T Q V I

AAAGGCGAGGGAAAGACAGAATTAAAAGACATACTTACAGACAACACTGGTAAGTTT 342
K G E G K T E L K D I L T D N T G K F

AAAGAACTTATAGAAAGTGCAGGTAAAGACATACTAAAAGAGATACTTACAGACAAT 399
K E L I E S A G K D I L K E I L T D N

ACCGGCAATTTTAAAGGACTTATAGAAGGTAATGGTAAGACGGAGGCAAAAGAGGTA 456
T G N F K G L I E G N G K T E A K E V

CGCACTAATGAAAAATTCAAGGAGCTTTTTGGAAGCAATGGTAAGGACATACTGAAA 513
R T N E K F K E L F G S N G K D I L K

GACATTCTTACTGATAACACCGGTAACTTTAAAGGCCTTATAGAAAGTGCAGCTAAG 570
D I L T D N T G N F K G L I E S A A K

GGTAAGCTGAAAGATCTTCTTATTGATGAAAAATTTCAAAAATTATTCGAGGATGAA 627
G K L K D L L I D E K F Q K L F E D E

ACGAAAGCTGGTCGTGTAAAAGAAATACTTACAGACAGCAACGCTAAGGAAATACTC 684
T K A G R V K E I L T D S N A K E I L

ACAAATGAAGTAGCAAAAGAGGTACTAAAATCCGATAAATTCAAGGAGGCAATAACT 741
T N E V A K E V L K S D K F K E A I T

GGCGATGGTAAGGACGCACTAAAAGAGATACTTACTTGTGATAAATTTAAAGAGGCT 798
G D G K D A L K E I L T C D K F K E A

GTAACAGGCAATGGTAAAGACATACTAAAAGGTATACTTACAGATAGCACTGGTAAA 855
V T G N G K D I L K G I L T D S T G K

TTTAAAGAACTTATAGAAAGTACTAGTAAAGACATACTAAAAGAGATACTTACAGAT 912
F K E L I E S T S K D I L K E I L T D

AATACCGGTAACTTTAAAGGCCTTATAGAAAGCACTGGCAAGGAGAAAGTAAAAGAA 969
N T G N F K G L I E S T G K E K V K E

CTTCTTATCGATGGGAAGTTTAAGGACCTGTTTACTGATGCAACAAAAGCCGGTTAT 1026
L L I D G K F K D L F T D A T K A G Y

GTAAAAGAAATACTCACGAACGATACAGCTAAGGAAGTACTTACAGATCAAACAGCA 1083
V K E I L T N D T A K E V L T D Q T A

AAGGAGGTCCTAAAAGATAGTACAGCTAAAGACATATTAAAGGACACAAACGCAGCT 1140
K E V L K D S T A K D I L K D T N A A

GCGGTACTAAAAAACAGCACAGCTAAAGAAATACTTACAAACCAAACCGCTAAAGAA 1197
A V L K N S T A K E I L T N Q T A K E

GTGCTTACAGATGGTACATCCAAAGAAGTACTAAAAGAGATACTTACTTGTGATAAA 1254
V L T D G T S K E V L K E I L T C D K

TTTAAAGAGGCAGTAACAGGAGATGGTAAAGACATACTAAAAGGTATACTTACAGAT 1311
F K E A V T G D G K D I L K G I L T D

AGCACTGGTAAGTTTAAAGAACTTATAGAAAGTACTGGTAAAGACATACTGAAAGAC 1368
S T G K F K E L I E S T G K D I L K D

Fig.2B

```
ATTCTTACAGATAGCACTGGTAAATTTAAAGAACTTATAGAAGTACTGGTAAAGAAC 1425
 I  L  T  D  S  T  G  K  F  K  E  L  I  E  V  L  V  K  N
AAGCTAAAAGAGATTCTTACAGATAACACCGGTAACTTCAAAGGGCTTGTAGAAGGC 1482
 K  L  K  E  I  L  T  D  N  T  G  N  F  K  G  L  V  E  G
GCCGGGAAGGATGAAGCAAAAGCAGTACTTACTGACGAGAAATTTAAAGGCTTGTTT 1539
 A  G  K  D  E  A  K  A  V  L  T  D  E  K  F  K  G  L  F
GATGACAAAACAATAGCTGGCTATGTAAAAGAAATACTCACCAGCGAGAAGTTTAAA 1596
 D  D  K  T  I  A  G  Y  V  K  E  I  L  T  S  E  K  F  K
AAACTGTTTGAAAGTGCAGGTAAGACTAAAGTAAAAGAACTCCTCATTGATGAGAAG 1653
 K  L  F  E  S  A  G  K  T  K  V  K  E  L  L  I  D  E  K
TTTCAAAAATTATTTGAGGATGACACGAAAGCCAGTCATGTAAAAGAAATACTCACG 1710
 F  Q  K  L  F  E  D  D  T  K  A  S  H  V  K  E  I  L  T
AACGATACAGCTAAGGAAATACTTACAGATCAAACAGCTAAAGAAGTCCTAAAGGAT 1767
 N  D  T  A  K  E  I  L  T  D  Q  T  A  K  E  V  L  K  D
AGTACAGCTAAAGAGATATTAAAGGACACAAACGCAGCTGCGCTACTAAAAGACAGC 1824
 S  T  A  K  E  I  L  K  D  T  N  A  A  A  L  L  K  D  S
ACAGCAAAAGAGGTACTAAAATCCGATAAATTTAAAGATGCAATAACTGGTGCTGGT 1881
 T  A  K  E  V  L  K  S  D  K  F  K  D  A  I  T  G  A  G
AAGGACGCACTAAAAGAGATACTTACTTGTGATAAATTTAAAGAGGCAGTAACAGGC 1938
 K  D  A  L  K  E  I  L  T  C  D  K  F  K  E  A  V  T  G
AATGGTAAAGACATACTAAAAGGTATACTTACAGATAGCACTGGTAAATTTAAAGAG 1995
 N  G  K  D  I  L  K  G  I  L  T  D  S  T  G  K  F  K  E
CTAATAGAAAGCACTGGTAAGGATAAGCTAAAAGAGATTCTTACAGATAACACCGGT 2052
 L  I  E  S  T  G  K  D  K  L  K  E  I  L  T  D  N  T  G
AACTTTAAATTTCTTGTAGAAGGCGCCGGTAAGGATGAAGCAAAAGCAGTACTTACT 2109
 N  F  K  F  L  V  E  G  A  G  K  D  E  A  K  A  V  L  T
CACGAGAAATTTAAAGACTTGTTTAATGTCAAAACAACAGCTGGCTACGTGAAAGAA 2166
 H  E  K  F  K  D  L  F  N  V  K  T  T  A  G  Y  V  K  E
ATACTTACCAGCGACAAGTTTAAAGAACTGTTTACTGATGCAACAAAAGCTGGCTAC 2223
 I  L  T  S  D  K  F  K  E  L  F  T  D  A  T  K  A  G  Y
GTGAAAGAAATACTCACGAACGATACAGCTAAGGAAATACTTACAGATCAAACAGCT 2280
 V  K  E  I  L  T  N  D  T  A  K  E  I  L  T  D  Q  T  A
AAAGAAGTCCTAAAGGATGGTACAGCTAAAGACATATTAAAGGACACAAACGCACGT 2337
 K  E  V  L  K  D  G  T  A  K  D  I  L  K  D  T  N  A  R
GCGCTACTAAAAGACAGCACAGCCAAAGAAGTACTAAAATGCGATAAATTTAAGGAA 2394
 A  L  L  K  D  S  T  A  K  E  V  L  K  C  D  K  F  K  E
GCAATAACAGGTGCCGGTAAAGATGAGCTAAAATACATACTCACTAATAGCGAGTTT 2451
 A  I  T  G  A  G  K  D  E  L  K  Y  I  L  T  N  S  E  F
AAAAGCTTATTTCATAGCAAAGATAGCGCTGAAGCTGTTAAAGCAATATTTACCCAC 2508
 K  S  L  F  H  S  K  D  S  A  E  A  V  K  A  I  F  T  H
AATAAGTTTAAAGAACTACTTGAACATGCAAGAACAACCCAAACAATACGCAGGCGC 2565
 N  K  F  K  E  L  L  E  H  A  R  T  T  Q  T  I  R  R  R
TTTGCAAATGCTTTAGATCAACTAAAAGCGCTAATTACCTGTGGCAGCGGTGATCAT 2622
 F  A  N  A  L  D  Q  L  K  A  L  I  T  C  G  S  G  D  H
```

Fig.2C

```
GCAACAAAACTACAAGCCTTTGGAAGTGCACTATGCACCAAAAAGAAGGAGTTGTGC 2679
 A  T  K  L  Q  A  F  G  S  A  L  C  T  K  K  K  E  L  C
AGTAATTTTAGCTGTGCAAACTGCAGTAGTACAACAACTGCATAATTACGTAGCGCT 2736
 S  N  F  S  C  A  N  C  S  S  T  T  T  A  *
AGGTGGGGGTAATTTACCCCCACCTAGCTAGAATCACACGGGGAACTTTCTCTCTAT 2793
   Transcription termination
TACTAGGGTCTTAGGATTTACAAACAAATTACTATGACAGCCA               2836
```

Fig.3A

```
ATTGGATCTAAATAATATACACTGGAGGTTCGTATTTTCTATTATGAAAGGGATAGA 57
                   -35                          -10         +1
ATGTTAAATTTTATGATTTTTTATAATAAAAATAGATATAAAATTTAGTAATTTTAT 114

AAATTTTTTATAACAAAGGACTACCCTCCCTACATAAAATTTCTAAGACGAAAAATC 171
                                                   RBS
CCTATGTCAAATGAAACACTTCTGAGCGTACTTTCTGATGAAACGCACTTTGCTAAT 228
    M  S  N  E  T  L  L  S  V  L  S  D  E  T  H  F  A  N
CTAGTTGATGAACTTCTTCTCAGCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285
 L  V  D  E  L  L  L  S  L  V  K  D  S  I  F  T  Q  V  I
AAAGGCGAGGGAAAGACAGAATTAAAAGACATTCTTACAGATAGCACTGGCAAGTTT 342
 K  G  E  G  K  T  E  L  K  D  I  L  T  D  S  T  G  K  F
AAAGAGCTGATAGGAAGTAGCGGTAAGGATATACTAAAAAGCATACACACAGATGGC 399
 K  E  L  I  G  S  S  G  K  D  I  L  K  S  I  H  T  D  G
TCAGGCAACTTTAAAGGCCTTATACAAAGCACAGGTAAGGCAGAAGTAAAAGAGGTA 456
 S  G  N  F  K  G  L  I  Q  S  T  G  K  A  E  V  K  E  V
CTCACTAATGAAAAATTCAAAGAGCTTTTTGGAAGCGAAGGTAAAGACATACTAAAA 513
 L  T  N  E  K  F  K  E  L  F  G  S  E  G  K  D  I  L  K
GAGATACTTACAGACAATACCGGCAATTTTAAAGGGCTTATAGAAGGCAAAGGTAAG 570
 E  I  L  T  D  N  T  G  N  F  K  G  L  I  E  G  K  G  K
GATGAAGCAAAGGGAGTACTTACTGACGAGAAATTTAAAGGCTTGTTTGATGACAAA 627
 D  E  A  K  G  V  L  T  D  E  K  F  K  G  L  F  D  D  K
ACAATAGCTGGCTATGTAAAAGAAATACTCACCAGCGAGAGTTTAAAAAACTGTTTG 684
 T  I  A  G  Y  V  K  E  I  L  T  S  E  S  L  K  N  C  L
AAAGGTGCAGGTAAGACTAAAGTAAAAGAACTCCTCATTGATGAGAAGTTTCAAAAA 741
 K  G  A  G  K  T  K  V  K  E  L  L  I  D  E  K  F  Q  K
TTATTTGAGGATGACACGAAAGCCAGTCATGTAAAAGAAATACTTACAGACAGTAAC 798
 L  F  E  D  D  T  K  A  S  H  V  K  E  I  L  T  D  S  N
GCTAAGGAAATACTCACAAATGAAGTAGCAAAAGAGGTACTAAAATCCGATAAATTT 855
 A  K  E  I  L  T  N  E  V  A  K  E  V  L  K  S  D  K  F
AAAGATGCAATAACTGGTGCTGGTAAGGACGCACTAAAAGAGATACTTACTTGCGAT 912
 K  D  A  I  T  G  A  G  K  D  A  L  K  E  I  L  T  C  D
AAATTTAAAGATGCAGTAACAGGTAATGGTAAGGACGCACTAAAAGAAATACTTACT 969
 K  F  K  D  A  V  T  G  N  G  K  D  A  L  K  E  I  L  T
TGCGATAAATTTAAAGATGCAGTAACAGGCAATGGTAAAGACAAGCTAAAAGAGATT 1026
 C  D  K  F  K  D  A  V  T  G  N  G  K  D  K  L  K  E  I
CTTACTCACGAGAAGTTTAAAGCACTCATAGAGAGTGAAGGCAAAGACATACTGAAA 1083
 L  T  H  E  K  F  K  A  L  I  E  S  E  G  K  D  I  L  K
GAAATTCTTACAGATAGTACCGGTAAATTTAAAGAGCTAATAGAAAGCACTGGTAAA 1140
 E  I  L  T  D  S  T  G  K  F  K  E  L  I  E  S  T  G  K
GACAAGCTAAAAGAGATTTTCACAGATAACACCGGTAACTTTAAAGGGCTTGTAGAA 1197
 D  K  L  K  E  I  F  T  D  N  T  G  N  F  K  G  L  V  E
GGCGCCGGTAAGGATGAAGCAAAAGCAGTACTTACTCACGAGAAATTTAAAGACTTG 1254
 G  A  G  K  D  E  A  K  A  V  L  T  H  E  K  F  K  D  L
TTTAATGACAAAACAACAGCTGGCTACGTGAAAGAAATACTCACCAGTGATAAGTTT 1311
 F  N  D  K  T  T  A  G  Y  V  K  E  I  L  T  S  D  K  F
AAAAAATTATTTGAGGACAATACCAAAGCTGGCTACGTGAAAGAAATACTCACGAAC 1368
 K  K  L  F  E  D  N  T  K  A  G  Y  V  K  E  I  L  T  N
```

Fig.3C

```
GATACAGCTAAGGAAATACTCACAAATCAAACAGCTAAAGAAGTCCTAAAAGACAGC 1425
 D  T  A  K  E  I  L  T  N  Q  T  A  K  E  V  L  K  D  S
ACAGCCAAAGAAATACTAAAATGCGATAAATTTAAGGACGCAATAACAGGCGCTGGT 1482
 T  A  K  E  I  L  K  C  D  K  F  K  D  A  I  T  G  A  G
AAAGATGAGCTAAAATACATACTCACTAATAACGAGTTTAAAAGCTTATTTGATAGC 1539
 K  D  E  L  K  Y  I  L  T  N  N  E  F  K  S  L  F  D  S
AAAGATAGCGCTGAAGCTGTTAAAGCAATATTTACCCACAATAAGTTTAAAGAACTA 1596
 K  D  S  A  E  A  V  K  A  I  F  T  H  N  K  F  K  E  L
CTTAAAACGTGCAAGGACAACCCAAAAAATACGGCGGCGCTTGCAGCTGCTTTAGAT 1653
 L  K  T  C  K  D  N  P  K  N  T  A  A  L  A  A  A  L  D
GAACTAAAAGATCTAATTACGTGTGACCGCAATAATCATGCAACAAAACTACAAGCC 1710
 E  L  K  D  L  I  T  C  D  R  N  N  H  A  T  K  L  Q  A
TTTGGAAGTGCACTATGCACCAGAAAAAAAGAGTCGTGCGATAATTTTAGCCCTGCA 1767
 F  G  S  A  L  C  T  R  K  K  E  S  C  D  N  F  S  P  A
AGCTGCAGTAGTACAGCAGCTACATAATTACGTAGCGCTAGGTGGGGTAAATTACC 1824
 S  C  S  S  T  A  A  T                 Transcription termination
CCCACCTACGTAGAATCACACGGGGAACTTTCTCTCTATTACTGAGGTCTTAGGATT 1881

TACTTTCAAATTACTATGACAGCCGATTAAATTATTATGACAGACGATACACTTTT  1937
```

Fig.4A

```
ATTGGATCTAAATAATGTACACTGGAGGTTCGTATTTTCTATTATGAAAGGGATAGA 57
              -35                         -10        +1
ATGTTAAATTTTATGATTTTTTATAATAAAAATAGATATAAAATTTAGTAGTTTTAT 114

AAATTTTTCATAACAAAGGACTATCCTCCTTGCATAAAATTTCTAAGACGAAAAATC 171
                                                   RBS
CTTATGTCAAATGAAACACTTCTGAGCGTACTTTCTGATGAAACGCACTTTGCTAAT 225
     M  S  N  E  T  L  L  S  V  L  S  D  E  T  H  F  A  N
CTAGTTGATGAACTTCTTCTCAGCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285
 L  V  D  E  L  L  L  S  L  V  K  D  S  I  F  T  Q  V  I
AAAGGCGAGGGAAAGACAGAATTAAAAGACATTCTTACAGATAGCACTGGCAAGTTT 342
 K  G  E  G  K  T  E  L  K  D  I  L  T  D  S  T  G  K  F
AAAGAGCTGATAGGAAGTAGCGGTAAGGATATACTAAAAAGCATACTCACAGATGGC 399
 K  E  L  I  G  S  S  G  K  D  I  L  K  S  I  L  T  D  G
TCAGGCAACTTTAAAGGCCTTATACAAAGCACAGGTAAGGCAGAAGTAAAAGAGGTA 456
 S  G  N  F  K  G  L  I  Q  S  T  G  K  A  E  V  K  E  V
CTCACTAATGAAAAATTCAAAGAGCTTTTTGGAAGCGATGGTAAGGATATATTAAAA 513
 L  T  N  E  K  F  K  E  L  F  G  S  D  G  K  D  I  L  K
GACATACTCACAGATAGCACTGGTAAGTTTAAAGAGCTGATAGGAAGTAGCGGTAAG 570
 D  I  L  T  D  S  T  G  K  F  K  E  L  I  G  S  S  G  K
GACATACTAAAAAACATTCTTACAGATAGCACCGGTAAGTTTAAAGAACTTATAGAA 627
 D  I  L  K  N  I  L  T  D  S  T  G  K  F  K  E  L  I  E
AGTGCAGGTAAGGGTAAGCTGAAAGACCTTCTTATTGATGGAAACTTTAAAAAATTA 684
 S  A  G  K  G  K  L  K  D  L  L  I  D  G  N  F  K  K  L
TTTGAGGATGACACGAAAGCTGCTCATGTAAAAGAAATACTTACAGACAGCAACGCT 741
 F  E  D  D  T  K  A  A  K  V  K  E  I  L  T  D  S  N  A
AAGGAAATACTCACAAATGAAGTAGCAAAAGAGGTACTAAAATCCGATAAATTTAAA 798
 K  E  I  L  T  N  E  V  A  K  E  V  L  K  S  D  K  F  K
GATGCAATAACTGGTGCTGGTAAGGACGCACTAAAAGAGATACTTACTTGCGATAAA 855
 D  A  I  T  G  A  G  K  D  A  L  K  E  I  L  T  C  D  K
TTTAAAGATGCAGTAACAGGCAATGGTAAGGACGCACTAAAAGAAATACTTACTTGC 912
 F  K  D  A  V  T  G  N  G  K  D  A  L  K  E  I  L  T  C
GATAAATTTAAAGATGCAGTAACAGGCAATGGTAAAGACAAGCTAAAAGAGATTCTT 969
 D  K  F  K  D  A  V  T  G  N  G  K  D  K  L  K  E  I  L
```

Fig.4B

```
ACTCACGAGAAGTTTAAAGCACTCATAGAGAGTGAAGGCAAAGACATACTGAAAGAC 1026
 T  H  E  K  F  K  A  L  I  E  S  E  G  K  D  I  L  K  D
ATTCTTACAGATAGTACCGGTAAATTTAAAGAGCTAATAGAAAGCACGGGTAAGGAT 1083
 I  L  T  D  S  T  G  K  F  K  E  L  I  E  S  T  G  K  D
GAAGCAAAAGCAGTACTTACTGACGAGAAATTTAAAGACTTGTTTAATGACAAAACA 1140
 E  A  K  A  V  L  T  D  E  K  F  K  D  L  F  N  D  K  T
ACAGCTGGCTACGTGAAAGAAATACTCACCAGTGATAAGTTTAAAAAATTATTTGAG 1197
 T  A  G  Y  V  K  E  I  L  T  S  D  K  F  K  K  L  F  E
GACAATACCAAAGCTGGCTACGTGAAAGAAATACTCACGAACGATACAGCTAAGGAA 1254
 D  N  T  K  A  G  Y  V  K  E  I  L  T  N  D  T  A  K  E
ATACTTACCAATCATAAATTTAAGGAAGCAATAACTGGCGATGGTAAAGACATACTG 1311
 I  L  T  N  H  K  F  K  E  A  I  T  G  D  G  K  D  I  L
AAAGAAATTCTTACAGATAGCACTGGTAACTTTAAAGGCGCAATAACAGGTGCCGGT 1368
 K  E  I  L  T  D  S  T  G  N  F  K  G  A  I  T  G  A  G
AAAGATCAGCTAAAATACATACTCACTAATAGCGAGTTTAAAAGCTTATTTGATAGC 1425
 K  D  Q  L  K  Y  I  L  T  N  S  E  F  K  S  L  F  D  S
AAAGATAGCGCTGAAGCTGTTAAAGAAATATTTACCCACAGTAAGTTTAAAGAACTA 1482
 K  D  S  A  E  A  V  K  E  I  F  T  H  S  K  F  K  E  L
CTTAAAACGTGCAAGGACAACCCAAAAAATACGGCGGCGCTTGCAGCTGCTTTAGAT 1539
 L  K  T  C  K  D  N  P  K  N  T  A  A  L  A  A  A  L  D
GAACTAAAAGATCTAATTACCTGTGGCAGCGGTGATCATGCAACAAAACTACAAGCC 1596
 E  L  K  D  L  I  T  C  G  S  G  D  H  A  T  K  L  Q  A
TTTGGAAGTGCACTATGCACCAGAAAAAAAGAGTCGTGCGATAATTTTAGCTCTGCA 1653
 F  G  S  A  L  C  T  R  K  K  E  S  C  D  N  F  S  S  A
AACTGCAGTAGTACAACAACTGCATAATTACGTAGCGCTAGGTGGGGTAATTTACC 1710
 N  C  S  S  T  T  T  A  *            Transcription termination
CCCACCTAGCTAGAATCACACGGGGAACTTTCTCTCTATTACTAGGGTCTTAGGATT 1767

ACAAACAAATTACTATGACAGCCA                                  1791
```

Fig.5

50kD antigen

I DII

MSNETLLSVLSDETHFANLVDELLLSLVKDSIFTQVIKGEGKTELKDILTDSTGKFKELIGSSGKDILKSIHTDGSGNFKGLIQSTGKAEVKEVLTNEKF

I DII

KELFGSEGKDILKEILTDNTGNFKGLIEGKGKDEAKGVLTDEKFKGLFDDKTIAGYVKEILTSESLKNCLKGAGKTKVKELLIDEKFQKLFEDTKASHV

I DIII I DIV

KELTDSNAKEILTNEVAKEVLKSDKFKDAITGAGKDAALKEILTCDKFKDAVTGNGKDALKEILTCDKFKDAVTGNGKDKLKEILTHEKFKALIESEG

I DV I DVI

KDILKEILTDSTGKFKELIESTGKDKLKEIFTDNTGNFKGLVEGAGKDEAKAVLTHEKFKDLFNDKTTAGYVKEILTSDKFKKLFEDNTKAGYVKEILT

I DVII I DVIII

NDTAKEILTNQTAKEVLKDSTAKEILKCDKFKDAITGAGKDELKYILTNNEFKSLFDSKDSAEAVKAIFTHNKFKELLKTCKDNPKNTAALAAALDE

LKDLITCDRNNHATKLQAFGSALCTRKKESCDNFSPASCSSTAAT

85kD antigen

I DI

MSNETLLSVLSDETHFANLVDELLLILVKDSIFTQVIKGEGKTELKDILTDNTGKFKELIESAGKDILKEILTDNTGNFKGLIEGNGKTEAKEVRTNEKF

KELFGSNGKDILKDILTDNTGNFKKGLIESAAKGKLKDLLIDEKFQKLFEDETKAGRVKEILTDSNAKEILTNEVAKEVLKSDKFKEAITGDGKDALKE

I DIV I DV I DVII

ILTCDKFKEAVTGNGKDILKGILTDSTGKFKELIESTSKDILKEILTDNTGNFKGLIESTGKEKVKELLIDGKFKDLFTDATKAGYVKEILTNDTAKEVL

TDQTAKEVLKDSTAKDILKDTNAAAVLKNSTAKEILTNQTAKEVLTDGTSKEVLKEILTCDKFKEAVTGDGKDILKGILTDSTGKFKELIESTGKDILK

I DVI

DILTDSTGKFKELIEVLVKNKLKEILTDNTGNFKGLVEGAGKDEAKAVLTDEKFKGLFDDKTIAGYVKEILTSEKFKKLFESAGKTKVKELLIDEKFQKL

I DII I DIII

FEDDTKASHVKEILTNDTAKEILTDQTAKEVLKDSTAKEILKDTNAAALLKDSTAKEVLKSDKFKDAITGAGKDAALKEILTCDKFKEAVTGNGKDIL

KGILTDSTGKFKELIESTGKDKLKEILTDNTGNFKFLVEGAGKDEAKAVLTHEKFKDLFNVKTTAGYVKEILTSDKFKELFTDATKAYVKEILTNDTAK

I DVIII

ILTDQTAKEVLKDGTAKDILKDTNARALLKDTAKEVLKCDKFKEAITGAGKDELKYILTNSEFKSLFHSKDSAEAVKAIFTHNKFKELLEHARTTQTIR

RRFANALDQLKALITCGSGDHATKLQAFGSALCTKKKELCSNFSCANCSSTTTA

Fig.6

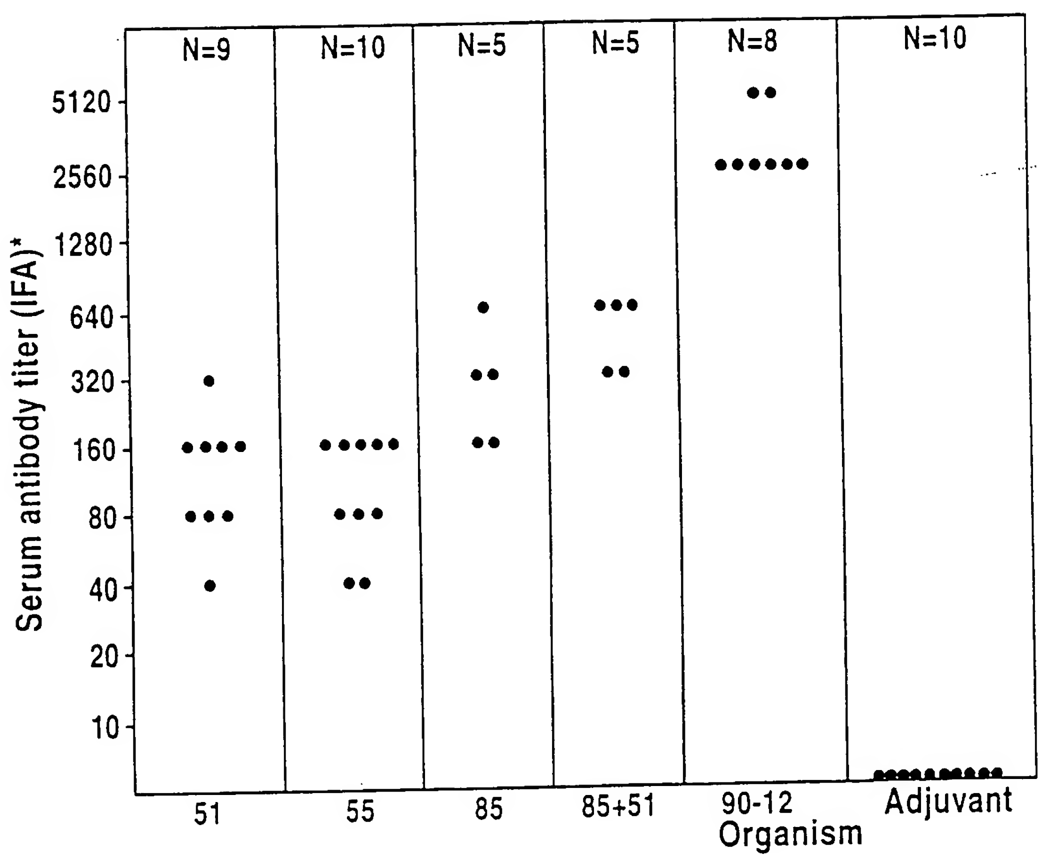

N=9
N=10
N=5
N=5
N=8
N=10
5120
2560
1280
640
320
160
80
40
20
10
Serum antibody titer (IFA)*
51
55
85
85+51
90-12
Adjuvant
Organism

Fig.7

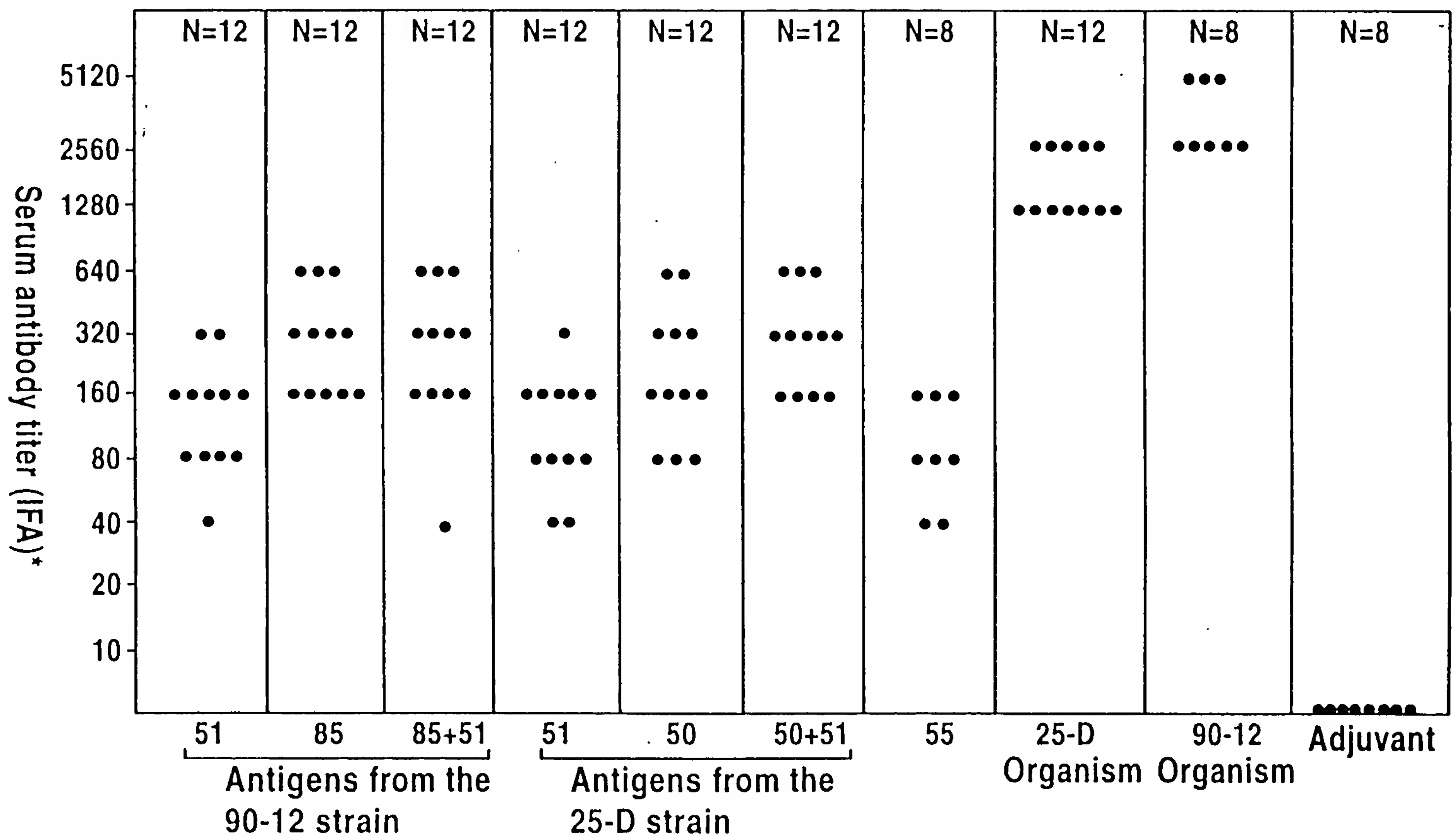
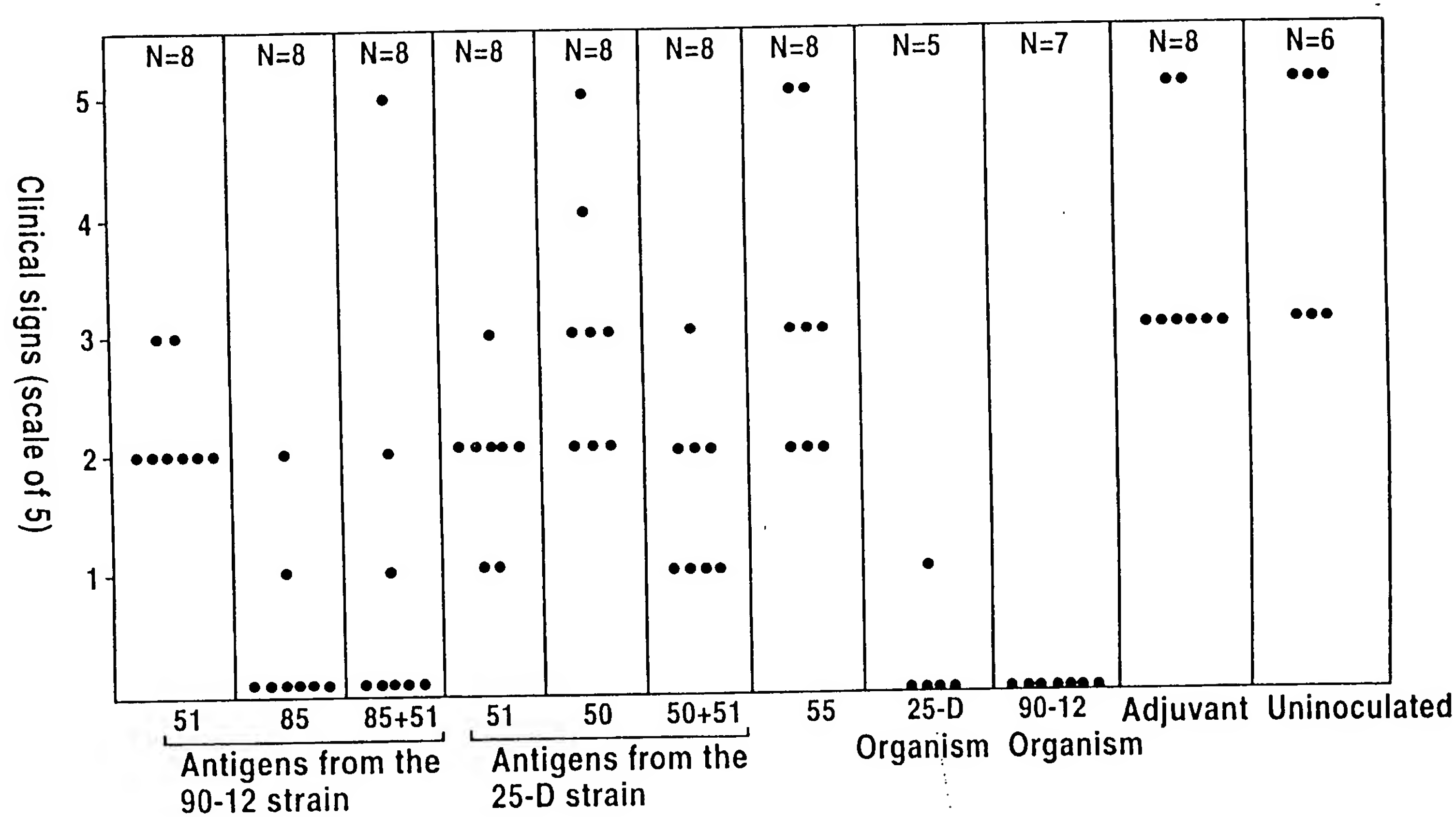
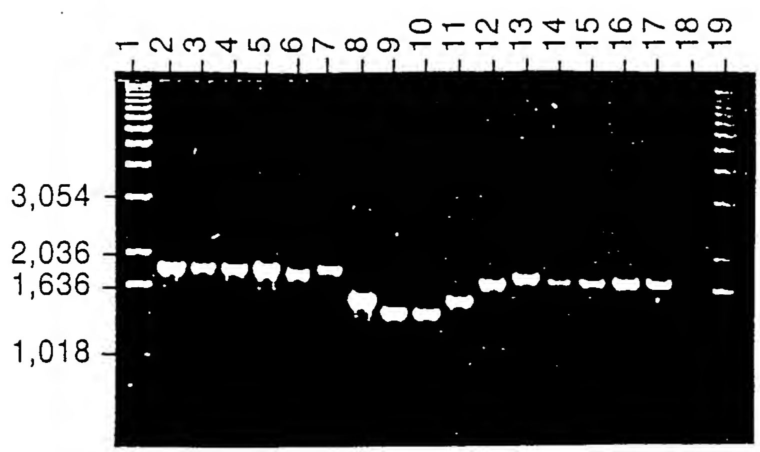

N=12
N=12
N=12
N=12
N=12
N=12
N=8
N=12
N=8
N=8
5120
2560
1280
640
320
160
80
40
20
10
Serum antibody titer (IFA)*
51
85
85+51
51
50
50+51
55
25-D Organism
90-12 Organism
Adjuvant
Antigens from the 90-12 strain
Antigens from the 25-D strain

Fig.8



N=8
N=8
N=8
N=8
N=8
N=8
N=8
N=5
N=7
N=8
N=6
Clinical signs (scale of 5)
5
4
3
2
1
51
85
85+51
51
50
50+51
55
25-D Organism
90-12 Organism
Adjuvant
Uninoculated
Antigens from the 90-12 strain
Antigens from the 25-D strain

Fig.9



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